Installation/Access Instructions for

LaTeX (MikTeX), TeXMaker, R, RStudio, and SAS

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The following instructions should be carried out right away so that you are ready to use the software and to uncover any glitches in the process that remained.

1 LaTeX and TeXMaker

LaTeX is a macro package based on TeX, developed by Donald Knuth, see LaTeX wiki. Most versions of LaTeX are free.

The LaTeX version used in this course is MikTeX (free) for the Windows™ operating system. Our interface is TeXMaker, although there are others, see TeX editors.

Those with a Mac may wish to consult MacTeX to get the appropriate version.

1.1 (Windows) Installing MikTeX:

$\Longrightarrow$ http://miktex.org. Then choose Download from the top menu bar, $\Longrightarrow$ Recommended Download (64bit, look at other downloads appropriate for you). The downloaded installer will be in your download directory. Execute (double click) it to install. Check the acceptance conditions. Under preferred paper size choose `letter` instead of the default `A4`. Follow the rest of the instructions, making default choices.

1.2 (Mac) Installing MacTeX:

Google MacTex or go to to download MacTeX. Note that it may take a while to download it; the file size is about 3 GB.

Sometimes your Mac may not allow you to install it; in this case, try $\Longrightarrow$ SystemPreference and $\Longrightarrow$ Security&Privacy and you should be able to allow your Mac to install it.

1.3 Installing TeXMaker:

You need to first install MikTeX or MacTeX and then install TeXMaker!

$\Longrightarrow$ http://www.xm1math.net/texmaker/download.html.

There is also one for Mac or Linux.

Download appropriate version.

Execute (double click) `texmakerwin32_install.exe` in your download directory. Agree to the GPL license. Install.

After these two installations, double click on any `abc.tex` file, containing the appropriate document markup commands, for example the file `abc.tex` should contain the following text

```
\documentclass{article}
\begin{document}
Hello World!
\end{document}
```

Double clicking this file will open up TeXMaker as an editor/interface for `abc.tex`.

If you don't yet have a file named `abc.tex`, go to a working directory of your choice, double click the Texmaker icon (create an icon from Program Files if necessary). This opens up a Texmaker session. Click File, then New, enter the above document text and Save as `abc.tex`. Of course, you can create this file with any other raw text editor, like Notepad. Don't use Word for this.

When looking at `abc.tex` from within Texmaker, click the first blue fat arrow with Quick Build next to it (you can make other choices instead of Quick Build, more on that later). If the PDF viewer does not show the result, click the next blue fat arrow with View PDF next to it, that should show you the result in a PDF viewer, provided there are no errors in your markup file `abc.tex`. This process will generate auxiliary files, such as `abc.log`, wich may provide clues about any errors.

2 R and RStudio

R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and MacOS.

RStudio is an editor/interface for running R. This interface looks the same for all operating systems: Linux, Mac, or Windows. That's why we use it.

2.1 Installing R:

Google CRAN. $\Longrightarrow$ The comprehensive R Archive Network. Choose the download appropriate for you. If you use Windows: Download R for Windows. Next choose `base`, choose the version appropriate for your version of Windows. The case of Mac is similar.

$\Longrightarrow$ Download `R 3.3.2` (or whatever newer version there is then) for Windows.
Execute (double click) `R-3.3.2-win.exe` in the Download directory.
Click `next` on all prompts during installation. At the end click `Finish`.
You should see 2 blue R icons on your desktop. You can double click on either to start an R session, using the R GUI, but we defer and will use RStudio after we have installed it. If you opened an R GUI you can terminate the R session by typing `q()` or by choosing File and then Exit.

2.2 Installing RStudio:

You need to first install R and then install R Studio!

Google `RStudio` or $\Longrightarrow$ http://rstudio.org/. Download RStudio for your system. Choose Download RStudio for Windows, Mac or Linux. Choose Download RStudio Desktop. Install (double click) the downloaded installer `RStudio-1.0.136.exe` (or a newer version) in your Download directory. $\Rightarrow$ hit `Next`, `Next`, `Install`, `Finish`.

In Windows, in the All Programs menu open the RStudio folder and drag the blue RStudio icon to your bottom tool bar for a quick opening of R, by clicking on that blue R tool bar icon.

In the console window on the left at the > prompt type

```
hist(rnorm(1e6),nclass=101,col=c("blue","orange"))
```

Note the autocompletion of parentheses. Hit enter and a graph of the histogram should appear on the right. After that type `q()` at the command prompt > in the left console and respond with `y` or `n`, or `c`.

It is a good idea to create separate workspaces for different projects. Within RStudio choose Project, then New Project, then New Directory, then Create project as subdirectory of, then Browse to navigate to a location for your working directory and, when prompted, fill in the name for that new directory. That will open a fresh instance of RStudio from that project directory. After exiting that RStudio session (using `q()`) you can open an R session by double clicking on its blue R file icon in such a project directory.

3 Access to SAS

You don't need to do this until week 6.

SAS is a commercial software with a yearly license fee. The Statistics Department has a site license. You access SAS via the virtual lab. How to get there? In Windows ⇒ All Programs ⇒ Accessories ⇒ Remote Desktop Connection. In the pop up panel in the Computer field type `ts.stat.washington.edu` and for user id use `NETID\yourUWuserName` and login using the password associated with `yourUWuserName`. This will open your remote desktop or virtual lab.

If you need access using a Mac with OS X, the old Remote Desktop Connection does not work well. You need to install the new app Microsoft Remote Desktop. Open the app and go to File ⟹ New. Then

- PC name: `ts.stat.washington.edu`
- User name: `NETID\yourUWuserName`
- Password: `yourUWpassword`

Click connect on the next panel and a server window should open. End of Mac specifics.

Don't be surprised seeing different desktops in repeated invocations of the virtual lab. There are two servers behind `ts`, namely `ts1` and `ts2`, and your are assigned one of them randomly each time. Those two servers show different desktops, at least for now.

When a terminal session opens it may inform you that new updates are available for installations. Please ignore those, you can't do any updating anyway due to permissions.

Once you are logged in via the virtual lab, go to the SAS folder under All Programs and click on SAS 9.3 (English) to start SAS, or drag and drop it on the task bar at the bottom of the screen, for faster access to SAS in future sessions. You can then access SAS from the task bar by clicking on its icon there. More on using SAS later. For now just terminate the program, either by clicking the × in the upper right corner of the SAS window or choose File and Exit from the top menu bar of the SAS window. This was just done to confirm your access to SAS.

When done with SAS make sure you close it and also log out from the virtual lab. That frees up resources for others. If you don't close SAS it will be there in the same state when you log in again to the virtual lab, i.e., it keeps running and ties up licenses.

4 Access to UDrive

You don't need to do this until week 6.

Within the virtual lab you have access to any of your files on the UDrive `U:`, which you can see under Computer.

On campus you should also have access to your UDrive from your physical laptop. Put `\\udrive.uw.edu\udrive` in the Run window, that you can access via ⇒ All Programs ⇒ Accessories ⇒ Run. For later convenience create a UDrive shortcut on your physical laptop desktop. Right click any empty part of that desktop ⇒ New ⇒ Shortcut, enter in location `\\udrive.uw.edu\udrive` ⇒ Next, then type in the name for this shortcut, say `UDrive`.

That would let you transfer any files from your physical machine to the UDrive and vice versa. (How that is handled by Mac users I don't know.) For doing the same off campus I was told that you should use an FTP process. The FileZilla Client (not FileZilla Server) should be an appropriate tool. Download it following the link http://wiki.filezilla-project.org/Main_Page and install it. Then

```
Open FileZilla
Type in sftp.udrive.uw.edu for host.
Enter in your NetID and password.
For port, type in "22."
Click on "QuickConnect."
It may ask you for confirmation regarding the
server. Accept the dialogue.
Double click on "udrive" on the right side of the window.
This will open your udrive folder.
Drag and drop files between the left side of the window (your computer)
and the right side of the window (the U Drive)
```

Having done this successfully, you may not want to memorize these steps. Instead you can enter them in the FileZilla toolbar under File ⇒ Site Manager ... and enter the relevant info there. Under My Sites enter `UDrive` (or whatever you prefer), under Protocol choose SFTP - SSH File Transfer Protocol and the rest is as before. After that you can initiate an SFTP session by going to Site Manager ... and double clicking the name you chose under My Sites.